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415 281 1350

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USSN 10/1666,909

filed September 17, 2003

PATENT

DELIVERY OF OLIGONUCLEOTIDE COMPOUNDS INTO OSTEOCLASTS AND MODULATION OF OSTEOCLAST DIFFERENTIATION

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation-in-part of United States patent application serial number 10/111,868, filed August 6, 2002, which is a national phase application of PCT/US00/29828, filed October 30, 2000, which claims priority to United States patent application serial number 09/435,296, filed November 5, 1999. The entire disclosures of these applications are hereby incorporated by reference in their entirety for all purposes.

BACKGROUND OF THE DISCLOSURE

FIELD OF THE DISCLOSURE

[0002] The present disclosure relates in general to methods of delivering oligonucleotide compounds into osteoclasts and osteoclast precursor cells. The present disclosure also relates to method of modulating osteoclast differentiation by introducing oligonucleotide compounds into osteoclast-like cells or osteoclast-precursor cells. Specifically, the present invention provides methods for delivering oligonucleotide compounds into osteoclasts and osteoclast precursor cells by transfecting the compounds into the target cells in the presence of a suitable non-liposomal transfection agent. The oligonucleotide compounds of the present disclosure are capable of binding a nucleic acid encoding RANK and modulating the expression of RANK. Upon transfection, these oligonucleotide compounds are capable of modulating differentiation of the osteoclast-like or osteoclast precursor cells into osteoclasts. The methods of the present disclosure may therefore be advantageously applied in the functional studies of osteoclasts and particularly the differentiation mechanisms of osteoclast-like cells. Modulation and

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